

CLAIMED

1. A fluid pressure cylinder comprising:

a case main body in which a reciprocating rod is mounted so as to be reciprocable in a forward direction and a backward direction;

a first lock unit including a first lock sleeve with a taper surface whose diameter is large toward a tip portion of the reciprocating rod, the first lock sleeve being mounted axially movably in the case main body, a first retainer holding a fastening member engaged with the taper surface and fitted axially movably in the reciprocating rod, and a first spring member applying a spring force to the first lock sleeve toward a rear end portion of the reciprocating rod;

a second lock unit including a second lock sleeve with a taper surface whose diameter is large toward the rear end portion of the reciprocating rod, the second lock sleeve being mounted axially movably in the case main body, a second retainer holding a fastening member engaged with the taper surface and fitted axially movably in the reciprocating rod, and a second spring member applying a spring force to the second lock sleeve toward the tip portion of the reciprocating rod;

a driving cylinder attached to the case main body, containing axially movably a driving piston provided with a rear end of the reciprocating rod, and having an advance pressure chamber and a retreat pressure chamber; and

a fastening cylinder attached to the case main body and containing a fastening rod so as to be reciprocable in a fastening direction and a fastening release direction, a fastening surface

contacting with respective inclined surfaces formed on the first and second lock sleeves so as to face to each other being formed on the fastening rod,

wherein the fastening rod causes the first and second lock sleeves to move in reverse directions and fixes the reciprocating rod by the first and second lock units.

2. The fluid pressure cylinder according to claim 1, wherein a spring member applying a spring force to the fastening rod in a fastening direction is provided in the fastening cylinder, and a release pressure chamber applying a fluid pressure in the fastening release direction to the fastening piston provided in the fastening rod is formed in the fastening cylinder.

3. The fluid pressure cylinder according to claim 2, wherein the retreat pressure chamber and the release pressure chamber are communicated by a communication path, and a throttle generating back pressure in the retreat pressure chamber at a time of a forward movement of the reciprocating rod is provided in a retreat flow path for connecting a fluid source and a supply/discharge port that supplies and discharges fluid to and from the retreat pressure chamber.

4. The fluid pressure cylinder according to claim 3, wherein the communication path is formed in the fastening cylinder, the supply/discharge port is provided in the case main body, and the release pressure chamber and the retreat pressure chamber are communicated via the case main body.

5. The fluid pressure cylinder according to claim 4, wherein a throttle for exerting a resisting force on fluid flowing from the case main body into the retreat pressure chamber is provided in a cover partitioning the case main body and the driving cylinder.

6. The fluid pressure cylinder according to claim 4, wherein a fastening pressure chamber for applying pressure in a fastening direction to the fastening piston is formed in the fastening cylinder and a supply/discharge port communicating with the fastening pressure chamber is formed, and a valve member for making the supply/discharge port and the fastening pressure chamber communicate with each other when the fastening rod moves a predetermined stroke in the fastening direction is mounted in the fastening rod.

7. The fluid pressure cylinder according to claim 1, wherein a throttle for generating back pressure in the advance pressure chamber at a time of a retreat movement of the reciprocating rod is provided in an forward flow path for connecting a fluid source and a supply/discharge port that supplies and discharges fluid to and from the advance pressure chamber.